Disorders of the stomatognathic system - selected issues from epidemiology and pathophysiology

(Zaburzenia układu stomatognatycznego – wybrane zagadnienia z epidemiologii i patofizjologii)

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Abstract – The authors present physiological tasks of the masticatory system. They discussed bruxism, paying attention to the psychosomatic background, the role of parafunctions and sleep disorders in the etiopathogenesis of bruxism. It was indicated that bruxism during sleep occurs in 5-8% of the world population, while bruxism in waking time in 20%. It was emphasized that bruxism can coexist with symptoms originating even from distant tissues or organs, e.g. stiff neck or convergence disorders. Then, dysfunctional syndromes of the temporomandibular joint were discussed.

Key words - bruxism, temporomandibular dysfunction syndromes, pathogenesis, epidemiology, symptoms.

Streszczenie – Autorzy przedstawili fizjologiczne zadania narządu żucia. Omówili bruksizm, zwracając uwagę na psychosomatyczne podłoże, rolę parafunkcji i zaburzeń snu w etiopatogenezie bruksizmu. Wskazano, że bruksizm w czasie snu występuje u 5-8% populacji światowej, natomiast bruksizm w czasie czuwania u 20%. Podkreślono, że bruksizm może współistnieć z objawami pochodzącymi nawet z odległych tkankach czy narządów np. sztywnością karku, czy zaburzeniami konwergencji. Następnie omówiono zespoły dysfunkcyjne stawu skroniowo-żuchwowego.

Słowa kluczowe - bruksizm, zespoły dysfunkcyjne stawu skroniowo-żuchwowego, patogeneza, epidemiologia, objawy.

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I. INTRODUCTION

Physiological activities of the masticatory apparatus are chewing, swallowing and speech. Any activity that is not one of these 3 is a parafunction and is treated as a non-physiological activity [1-4]. Parafunctions are, therefore, bruxism, and such behaviors as chewing gum, nail biting, pens as well as other objects. The occurrence of parafunctions is estimated in 60-80% of the population. 92% of adolescents chew gum, while 50-70% of children bite their nails and 30% of adults [5]. Parafunctions can be divided into two types - short-circuit and non-interruptible.

As the name suggests, in the first one there is a short circuit, in the second there is none, while both lead to disorders of temporomandibular joints and stomatognathic system. There is a different division of paraphernalia taking into account contact surfaces. There are three types: DD (Dens-Dens), DM (Dens-Mucosa), DC (Dens-Corpus alienum), MM (Mucosa-Mucosa). [6]

II.BRUXISM

Bruxism is a psychosomatic disorder that manifests itself in the stomatognathic system [3,7]. Dentistry classifies bruxism as a parafunction and sleep medicine as a parasomnia. It consists of uncontrolled increased activity of jaw muscles, jaw clamping, grinding, stiffening or protruding of the mandible. We distinguish two types of this disease - bruxism during sleep and bruxism during waking. Currently, the names "daily bruks" and "nocturnal bruxism" depart from the names, because the latter can also occur during sleep during the day [10]. In bruxism, vigorous teeth (increased muscle activity, chewing, compression in temporomandibular joints) occur in wakefulness, while in bruxism during sleep, grinding (increased muscle activity, chewing, compression and slight movements in temporomandibular joints, occlusal surface friction) teeth of the upper arch with the teeth of the lower arch). An important difference between the types is the ability to consciously control muscle tone and link this paraffin with the emotional state found in bruxism during wakefulness, while in the second type the patient is not aware of the activities he performs, therefore he cannot stop performing them, or link their occurrence with any factor. Patients who practice bruxism during sleep are often not aware of this fact for a long time, even for several years. Even when they find out, they often deny this fact, considering this ailment as shameful, intimate [6]. Bruxism does not affect the quality and length of sleep [3]

III. ETIOLOGY AND EPIDEMIOLOGY

The cause of the occurrence of bruxism are: malocclusion, abnormalities in temporomandibular joint formation, emotional tension, reduced coping skills and injuries in the musculoskeletal system. The causes of bruxism during sleep include introversion, practicing this paraffin as an expression of an increased level of stress or tension in the life situation [2,6,7].

Bruxism during sleep occurs in 5-8% of the world population, while bruxism in waking time in 20% [3]. While the occurrence of bruxism during the waking time due to the awareness of the patient about the occurrence of this paraffin is easily detected, the bruxism during sleep is a diagnostic challenge. Hence a large discrepancy between the surveys [3,7]. Polish research reports that bruxism affects 65-80% of respondents, others that it occurs in 27.5% of adults and in 5% of children [6].

IV.PATHEOLOGY AND SYMPTOMS

The limbic system is responsible for experiencing emotions and motivation. In the situation of increased emotional tension, it affects the reticular formation, so that the latter sends an impulse to the chewing muscles causing their constant and increased contractions. This state is perpetuated and maintained as long as there are psychological factors triggering this mechanism [3,4].

Bruxism is the most harmful to the masticatory organ of paraffin. Health hazards resulting from bruxism include clash of occlusal surfaces of teeth (including enamel), broken tooth crowns, increased mobility of teeth, movement of teeth within the arch, destruction of joint surfaces of temporomandibular joints, hypertension of masticatory muscles [3,4,6]. The consequence of mechanical micro-injuries may be increased "loss" of dental fillings. Among physical symptoms, the pain of the joints area, toothache, and jaw and jaw pain play a dominant role. The consequence of bruxism may also be a reduction in the extent of abduction of the mandible.

Bruxism may coexist with symptoms in distant tissues - eg stiffness of head and neck muscles [6], but also symptoms from other organs - eg convergence disorders [7,8].

V. CRANIO – MANDIBULAR DYSFUNCTION

Over the years, many terms have been created for dysfunctional syndromes of the temporo-mandibular joint and the disorder of the entire stomatognathic system. Diagnosis of the stomatognathic system is a difficult challenge due to the coexistence of the symptoms of cranio-mandible dysfunctions with other health problems, including sinusitis, neck pain and stiffness, postural disorders. It is difficult to clearly determine the "classic case" of cranio-mandible dysfunction [1-3]. It is a broad concept that includes both symptoms of the masticatory motor system, non-specific symptoms (eg headache), or symptoms associated with

other systems or organs (eg convergence disorders, tinnitus, anxiety in the crowd). It is also not possible to reduce the concept of cranio-mandibular dysfunction to temporomandibular joint disorders [2,6,7]

Skull and jaw dysfunction includes increased or inadequately distributed muscle tone of the muscles: face (facial expression), tongue, muscle, excretory muscles, chewing; limitation of temporomandibular joint mobility and its dysfunctions (dislocation of the disc, repositions of the head of the mandible) [4]

VI. MALOCCLUSION AND BREAST FEEDING

Malocclusion is one of the causes of bruxism. Breastfeeding in infancy is administered as a protective factor against their occurrence. It has been proven that this way of feeding an infant reduces the risk of a defect in the anterior-posterior plane. In addition, breastfeeding for less than 6 months increases the risk of a parotidation in a child's development four times [4.9].

VII.STRESS AND STOMATOGNATHIC SYSTEM

As it has already been mentioned, the reticular formation together with the limbic system is responsible for regulating muscle tone. These structures are directly responsible also for the adaptability of the body in the situation of susceptibility to the stress factor. The limbic system is also a kind of a gate between the conscious action of the brain and its subconscious (vegetative) activity. Hence, the stomatognathic system is one of those areas of the body that manifest the effects of strong or long-term stress. [4]

This has been proven by studies using potentiometers. The research group was subjected to the action of two different stimuli - relaxing music and a computer game. It was found that during the game, muscle potentials are much higher than when listening to music [4, 10].

Common character traits were observed for bruxists: anxiety, lower self-esteem, unwillingness to express their own emotions. The authors report a higher occurrence of bruxism in the group of neurotic people. However, the results do not carry statistical significance [11].

Many authors report, in clinical experience, the coexistence of cranioarthritic dysfunction with disorders of the group of motor overactivity (restless legs syndrome, hyperactivity disorder) [6, 7, 12]. Studies on attention deficit hyperactivity disorder report that 30-50% of adults have symptoms of this disorder [13].

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